

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Analog circuit design</b>		Code <b>1010842121010841941</b>
Field of study <b>Electronics and Telecommunications</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Multimedia and Consumer Electronics</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>elective</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>2</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>from field</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b> <b>5 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Krzysztof Klimaszewski email: kklima@et.put.poznan.pl tel. +48 61 665 3895 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Has extended, in-depth knowledge of those branches of mathematics which are used in formulating and solving problems in electronic and telecommunications. Has knowledge of construction, architecture and practical application of programmable digital circuits. Has a detailed, systematic knowledge of the fundamentals of circuit theory, together with necessary mathematical background; this knowledge allows him/her to understand, analyze and evaluate the operation of electrical circuits.
2	<b>Skills</b>	Is able to communicate freely in English. Is able to discuss professional matters in English; is able to use knowledgeably English language sources (books, technical and scientific journals, application notes, catalogues, instructions, standards, etc.).
3	<b>Social competencies</b>	Is aware of the limitations of his/her current knowledge and skills; is committed to further self-study. Is aware of the necessity to approach solving technical problems with responsibility and professionalism.
<b>Assumptions and objectives of the course:</b> Acquainting students with theoretical and practical aspects of electronic circuit design. Practical realisation of a chosen electronic circuit from design to working device.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Has knowledge of properties and characteristics of electronic parts, design and analysis of electronic circuits and printed circuit board design. - [K2_W14]		
<b>Skills:</b> 1. Is able to find the required information about modern integrated circuits and use them in the designed circuits - [K2_U01] 2. Is able to design and build an analog or analog/digital circuit - [K2_U15] 3. Is able to design an electronic circuit making use of a microcontroller chosen accordingly to project requirements - [K2_U04]		
<b>Social competencies:</b> 1. Knows the limitations of his/her own knowledge and understands the requirement of constant development of his/her knowledge - [K2_K04] 2. Understands the importance of ensuring the safety of the electronic circuits - [K2_K06]		

<b>Assessment methods of study outcomes</b>		
Written exam		
Demonstration of the working prototype of the designed device		
<b>Course description</b>		
lecture: Powering the electronic circuits - linear and switching stabilizers, power sources. Manufacturing technologies of electronic circuits. Rules of printed circuit board design. Examples of design solutions of electronic circuits.		
lab: Practical printed circuit board design Preparing production data. building the designed circuit. Measurements and debugging of the designed circuit.		
<b>Basic bibliography:</b>		
1. U. Tietze, Ch. Schenk, ?Układy Półprzewodnikowe?, WNT 2009 2. Filipkowski A., ?Układy Elektroniczne Analogowe i Cyfrowe ?, WNT 2006 3. Nosal Z., Baranowski J., ?Układy Elektroniczne cz.I Układy Analogowe Liniowe?, WNT 2003 4. P. Horowitz, W. Hill, ?Sztuka Elektroniki?, WKiŁ 2006		
<b>Additional bibliography:</b>		
1. Adel S. Sedra, Kenneth C. Smith, ?Microelectronic Circuits?, Oxford University Press 2004 2. Richard C. Jaeger, ?Microelectronic Circuit Design?, McGraw-Hill 1997 3. S. Kuta ?Elementy i Układy Elektroniczne cz. I? Wydawnictwo AGH, 2000 4. Robert A. Pease, ?Projektowanie Układów Analogowych?, Wydawnictwo BTC 2005 5. Józef Boksa, ?Analogowe Układy Elektroniczne?, Wydawnictwo BTC 2007		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. lectures attendance	30	
2. laboratory exercises attendance	30	
3. preparation for labs	20	
4. literature study	20	
5. designing the circuits	20	
6. exam	2	
7. preparation for exam	5	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	125	5
Contact hours	65	3
Practical activities	70	3